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ABSTRACT

There is a strong indication that a student's estimate of his achievement may be more accurate than teacher or peer evaluation. Furthermore, a teacher can help a student improve his self-evaluation over a period of time if the teacher takes into consideration aspects of the student's personality. The purpose of this study was to determine: (1) if a student's estimate of his academic performance was more accurate initially than at points halfway through and at the end of the term; (2) if age, sex, quality point average, grade received, or personality variables, as measured by the 16 Personality Factor Questionnaire, would differ significantly among the students who accurately estimated from those who either overestimated or underestimated their final grade in a course; and (3) if there were differences for these variables between the 3 groups of students in the fields of education, engineering, and business. The findings of the study were in opposition to previous studies. They show that: (1) students were best able to evaluate their performance at the beginning of the term; (2) there was little difference between high achieving and low achieving students in ability to predict their course grade, but older students proved more accurate than the younger students; and (3) none of the personality factors were found to be significant for over, under, and accurate estimators in any of their respective academic areas. (HS)

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THE RELATIONSHIP OF STUDENT GRADE EXPECTATIONS, SELECTED CHARACTERISTICS, AND ACADEMIC PERFORMANCE FOR EDUCATION, ENGINEERING AND BUSINESS MAJORS*

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The college student facing the instructor the first day of class brings with him a unique combination of personality characteristics and history of success and failure in learning situations. Student performance in a course seems, in part, to depend upon his own estimation of how he will achieve during the term. This initial self-evaluation plus information concerning the instructor and course content, to a large part, determines the attitudinal set toward the course and initial study patterns. If this is true, it would seem important for the instructor to be able to identify those students who cannot accurately evaluate their own performance so that he might aid the student in developing more realistic course expectations and study patterns.

Related research tends to support the concept of accuracy of student self-evaluation. In a review of both published and unpublished literature, Russell(4) concluded that there is a strong indication that a student's estimate of his achievement may be more accurate than teacher or peer evaluation. He further stated that a teacher can help a student improve his self-evaluation over a period of time if the teacher takes into consideration aspects of the student's personality.

Dysinger and Wilkins(2) asked students to estimate their grades at the end of a semester. They found that by the end of the term 64.5% could estimate the grade in a course correctly, 33.5% missed the grade assigned by only one letter grade (approximately half were high and half low), and 1.5% missed the grade assigned by two letter grades. Students with a high grade point average made more accurate estimates than those with a low average. Low average students tended to overestimate their grades. Juniors and seniors as a whole made better estimates than freshmen and sophomores.

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Murstein(3) asked beginning psychology students to estimate their final grade at the beginning and end of the term. The results of the study indicated that the students who made higher grades in the course were generally realistic in their expectations of the grade received. Students who received low grades were unrealistic in their grade estimates, perceiving themselves as deserving a grade higher than they received. They changed little from beginning to end of the term in their estimation, thus benefiting little from the additional information gained during the term. Murstein suggested that a study of personality patterns should be conducted.

Previous research has indicated that certain personality patterns are associated with success in teaching, engineering, and business. For example, Cattell and Eber(1), found that certain personality variables from the Sixteen Personality Factor Questionnaire (16PF) were useful in discriminating general occupational areas. Academically successful students and teachers were outgoing(Factor A), and to a lesser extent socially bold(Factor H) and sensitive(Factor I). Engineers were found to be sober(Factor F), shrewd(Factor N), receptive to new ideas(Factor Q_1), and self-fufficient(Factor Q_2). Factors for successful Business personnel include extraversion (Factor A), shrewdness(Factor N), tough-mindedness(Factor I), and openness to new ideas(Factor Q_1). No studies have indicated what characteristics might separate these students who accurately estimate their grades from those who either overestimate or underestimate their performance.

The purpose of this study were to determine: (1) if a student's estimate of his academic performance was more accurate initially than at points halfway through and at the end of the term; (2) if age, sex, Quality Point Average, grade received, or personality variables, as measured by the 16PF, would differ significantly among the Ss who accurately estimated from those who either overestimated or underestimated their final grade in a course; and (3) if there were differences for these variables between the three groups of Ss, i.e., Education, Engineering and Business.

METHODOLOGY

Students(N=415) enrolled in courses normally taken by third quarter sophomores majoring in Education, Engineering, and Business served as Ss for this study. Of these, 149 Education majors were enrolled in Educational Psychology, 88 Engineering majors in Engineering Mechanics and 178 Business majors in the third quarter of Accounting. Each course within

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the respective colleges consisted of four separate sections taught by two different instructors. On the first day of class, the investigators visited each class and explained that a study was being conducted to determine how well students could estimate their success in the course as measured by the final grade. Each student was then asked to estimate(E1) what grade he thought that he would receive in the course. During the same class period the Ss were administered the 16PF. The next estimate(E2) of the Ss final grade was taken at a point in time when the student was aware of his level of performance for about 50% of the term. The third estimate(E3) of final grade was obtained on the last day of class prior to the final examination. Course grades(CG) were obtained from each instructor and Quality Point Averages(QPA) were obtained from each Ss permanent record.

RESULTS

The four variables, E1, E2, E3, and CG, were analyzed for all possible combinations of two variables for the pool Ss in Education, Engineering, and Business, for the dichotomy change in grade versus no change in grade. Chi Squares were computed for all six possible combinations for the three academic areas and are shown in Table 1.

All values were significant ($P < .05$) except E1 vs CG for Education and Engineering Students. For these two academic groups, Ss tended to receive the grade they predicted at the beginning of the term. In all other cases, there was significant change from estimate to estimate and from estimates E1, E2, E3 to Course Grade. Business Ss at no point seemed able to accurately evaluate their performance.

Previous studies(2,3) have indicated a difference in the ability of "high" achieving students (those receiving the grade A or B in the course) and "low" achieving students (those receiving C, D, or F) to predict grades. Separate Chi Squares were computed for A, B, students and C, D, or F, students for Education, Engineering, and Business(Table 2).

The data contained in Table 2 indicated little difference between the high and low Ss for the three academic areas. The greatest difference was for Business Ss. Low Ss were best able to predict their grade, while high Ss were never able to accurately evaluate their performance in the course. Both Education groups were best able to estimate their final grade at the beginning of the term. No significant change was found between the three estimates and CG for low Education Ss.

TABLE 1

CHI SQUARES FOR ALL POSSIBLE COMBINATIONS OF VARIABLES E1, E2, E3 AND CG FOR DIMENSION CHANGE VERSUS NO CHANGE FOR TOTAL GROUP, A OR B, AND C, D OR F EDUCATION, ENGINEERING, AND BUSINESS STUDENTS

VARIABLES	TOTAL		A, B,		C, D, F	
	χ^2	df	χ^2	df	χ^2	df
EDUCATION						
E1 vs E2	30.05**	2	16.00**	2	17.82**	2
E1 vs E3	13.93**	2	9.36**	2	8.58**	2
E1 vs CG	2.48	3	2.30	2	0.05	1
E2 vs E3	59.83**	4	34.67**	2	11.08**	2
E2 vs E3	33.56**	4	20.31**	2	00.00	0
E3 vs CG	57.12**	4	27.92**	3	0.454	1
ENGINEERING						
E1 vs E2	23.49**	6	3.54	2	8.06	4
E1 vs E3	19.60*	8	6.84	4	6.01	3
E1 vs CG	11.32	8	1.81	2	4.60	4
E2 vs E3	64.63**	8	24.07**	4	39.05**	6
E2 vs E3	33.63**	8	8.33*	2	15.63*	6
E3 vs ECG	73.53**	12	9.43**	2	31.62**	6
BUSINESS						
E1 vs E2	79.93**	6	20.49**	2	37.30**	4
E1 vs E3	42.76**	8	16.34**	2	8.74	6
E1 vs CG	34.50**	8	9.61*	1	3.40	3
E2 vs E3	183.10**	9	64.56**	4	37.63**	3
E2 vs E3	112.40**	8	20.38**	2	12.26*	4
E3 vs CG	195.54**	12	33.62**	2	54.42**	6

**p < .01
*p < .05

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Once it had been determined that the Ss first estimate of their course grade was generally the best, the Ss were separated within the respective academic disciplines on the basis of whether their grades from first estimate to course grade remained the same(Same Ss), gone up(Up Ss), or had gone down(Down Ss). To identify those characteristics which might separate these groups, the Ss were examined on the variables course grade, age, sex, QPA, and sixteen personality factors as measured by the 16PF. Analyses of variance were computed for the three academic areas for the twenty student variables and the results are shown in Table 2.

Significant variance was shown for the three academic areas for the variables course grade and QPA. Education Ss showed significant variance for the 16PF Factors B, and C; Engineering Ss showed significant variance for 16PF Factors H, N, and O ; and Business Ss showed significant variance on 16PF Factors E, F, and H. To determine whether Same, Up, or Down groups differed significantly for these variables, t tests were computed, the results of which are found in Table 3.

The means for Same and Up Ss were significantly different from Down Ss for the variable course grade. In all three academic areas, Ss who had estimated their grades correctly or who had underestimated their course grade received better grades than the Ss who had overestimated their course grade. The means for Up and Down Ss differed significantly for the three academic areas. Students who underestimated their grades had significantly higher QPA's than those who had overestimated their grades. These data indicated that the Ss who were best able to evaluate their academic performance were the average students while academically poorer students tended to over-estimate their course grade and better students underestimated their potential.

Up and Down Education Ss differed significantly on Factor B of the 16PF. Students whose grades went up from their initial estimation tended to be more intelligent than those who went down. Same and Down Ss differed significantly on Factor E. Ss who accurately estimated their grade tended to be more aggressive and assertive than those who overestimated their performance. Up and Same Ss also differed on Factor C with the same Ss being more mature than down Ss.

Same and Down Engineering Ss differed significantly from Up Ss on 16PF Factors H and O. Up Ss tended to be more adventurous and possessed higher self-sentiment than did the Same and Down Ss. Up and Down Ss differed significantly from Same Ss on Factor N. Down Ss tended to be more naive.

TABLE 2

ANALYSIS OF VARIANCE FOR ONE-WAY DESIGN FOR OVERESTIMATING, UNDERESTIMATING, AND SAME Ss IN EDUCATION, ENGINEERING, AND BUSINESS FOR VARIABLES CG, AGE, SEX, QPA, AND 16PF FACTORS

VARIABLES	EDUCATION(df2/146) F RATIO	ENGINEERING(df2/85) F RATIO	BUSINESS(df2/175) F RATIO
CG	78.39**	56.19**	71.73
AGE	0.67	1.18	0.54
SEX	1.98	0.82	2.51
QPA	11.15**	5.31**	15.40**
16PF FACTORS			
A	2.03	1.06	1.86
B	3.64*	0.51	0.87
C	3.50	0.92	0.12
E	5.68**	0.32	3.50*
F	0.47	0.12	5.49**
G	0.24	0.67	1.30
H	1.82	3.18*	4.87**
I	0.81	0.16	1.46
L	0.47	0.03	0.74
M	1.74	0.97	0.26
N	0.71	3.26*	0.74
O	2.78	1.11	0.31
Q_1	0.02	0.86	0.08
Q_2	0.17	1.26	0.09
Q_3	0.59	5.34	1.74
Q_4	0.46	2.21	1.45

**p < .01
*p < .05

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TABLE 3

SELECTED t-TEST RESULTS FOR SAME(S), UP(U), AND DOWN(D), EDUCATION, ENGINEERING, AND BUSINESS Ss FOR VARIABLE CG, QPA, AND SIGNIFICANT 16PF FACTORS

	EDUCATION			ENGINEERING			BUSINESS		
	S vs U (df=74)	U vs D (df=88)	S vs D (df=120)	S vs U (df=71)	U vs D (df=63)	S vs D (df=76)	S vs U (df=71)	U vs D (df=112)	S vs D (df=163)
VARIABLES									
cg		3.96**			4.20**			4.14**	
QPA	3.12**	4.40**	2.57*	1.51	3.51**	1.88	2.53*	4.54**	4.01
16PF FACTORS									
B	1.69	2.46*	1.31						
C	1.17	.31	2.66**						
E	3.49	.80	.89				.63	2.25*	1.57
F							.27	1.17	3.00**
H				2.09*	2.53*	.30	1.97	3.72**	1.32*
N				.33	2.62*	1.44			
Q_3				2.19*	3.92*	.17			

** = p < .01
* = p < .05

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The means for Up and Down Business Ss differed significantly on Factors E and H. Up Ss tended to be more mature and adventurous than Down Ss. Same and Down Ss differed on Factor F with Same Ss being more enthusiastic and alert.

FINDINGS AND CONSLUSIONS

The findings of this study were in opposition to previous studies. Contrary to most research(2,3), Ss were best able to evaluate their performance at the beginning of the term. The additional experience gained through the term seemed only to confuse their selfevaluation. In contrast to most studies(2,3), little difference was found between high achieving(A,B), and low achieving(C,D,F) Ss in ability to predict their course grade. In fact, low achieving Business majors were able to estimate their course grade initially while high achieving Ss were never able to accurately judge their level of performance. Since the first grade estimate was found to be the most accurate, Ss were divided into three groups, i.e., those who overestimated, underestimated and accurately predicted their course grade. For all three academic areas accurate and underestimating Ss received better grades than overestimators. When Quality Point Average was considered, low achievers tended to overestimate their grades while high achievers underestimated their potential performance. Ss who accurately evaluated their performance tended to be "average" students. This would indicate that academically poor students tend to have an unrealistic evaluation of their future performance in a course and probably develop unrealistic study patterns based on this faculty evaluation. Some 16PF Factors were found to be significantly related to ability to estimate grades accurately. For Education majors, underestimators tended to be more intelligent(Factor B) than overestimators. Accurate estimators were more aggressive and assertive(Factor C) and more mature(Factor E) than overestimators.

Engineering underestimators possessed higher self-sentiment(Factor H) than overestimators or accurate estimators. Overestimators tended to be more naive(Factor O) than underestimators. Business Ss who overestimated[3] tended to be less mature(Factor E) than underestimators and possessed lower self-sentiment(Factor F) than accurate estimators. None of the personality factors reported in the research to be characteristic of successful students in Business, Education and Engineering were found to be significant for over under and accurate estimators in any of their respective academic areas.

Students who are unable to accurately predict their own performance are not likely to develop realistic study patterns. Thus it would seem important for instructors to be able to identify those students in order to aid them in developing more realistic study patterns. The results of this study indicated that it is possible to identify at the beginning of the term those who are unable to realistically evaluate their potential performance, thus enabling the instructor to aid the student through feedback and/or counseling. The results also suggested that the ability to accurately evaluate oneself is a function of previous academic performance and certain aspects of personality. It is felt that more research into the relationship of personality to accurate self-evaluation is warranted.

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